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EXAMINER

GAUTHIER, GERALD

ART UNIT

PAPER NUMBER

2645

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,256

Applicant(s)

JOSHUA BERS

Examiner

Gerald Gauthier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-8, 11, 14, 15-20** are rejected under 35 U.S.C. 102(e) as being anticipated by Carpenter et al. (US 6,269,153).

Regarding **claim 1**, Carpenter discloses an automated call routing system (102 on FIG. 2) that routes a telephone call (column 2, lines 56-65) by responding to a routing objective (100 on FIG. 1) of a calling party (110 on FIG. 1), comprising:

a speech recognizer (204 on FIG. 2) that determines at least one phrase from a speech utterance made by the calling party (column 3, lines 42-47) and outputs a digital phrase (column 3, lines 47-63) [The voice recognition generates the text for the router].

a topic identifier (402 on FIG. 4) that receives the digital phrase (text, column 7, line 49) and converts the digital phrase to at least one of a word stem (column 8, lines 18-20) [The root of the term is the word stem] and a word class (column 8, lines 10-13) [The eligible words are a word class in the term list] and generates a topic output (column 7, lines 47-67) [The term extractor extract relevant terms to form a query to match the caller's response]; and

a maximum benefit router (412 on FIG. 4) that receives the topic output [The pseudo-document vector 407] and determines where to route the telephone call in order to optimize at least one predetermined parameter [Routing destinations: New Accounts Department, Checking Department and Loan Department] (column 8, lines 31-67) [The router determines the predetermined parameter according to the pseudo-document vector received where to route the call].

Regarding **claim 2**, Carpenter discloses an automated call routing system, wherein the maximum benefit router separates the routing objective of the calling party according to call topics (column 8, lines 59-67) [The router filters the call according to the call topics (checking, car loan or new account) for the destination of the call].

Regarding **claim 3**, Carpenter discloses an automated call routing system, wherein the maximum benefit router separates the routing objective of the calling party from a second objective of a call center (column 3, lines 42-63).

Regarding **claim 4**, Carpenter discloses an automated call routing system, wherein the at least one predetermined parameter is selected from an $m \times n$ benefit matrix having m routing destinations and n caller topics (column 4, lines 37-53) [The term-document matrix forms a basis associating a query with one of the documents to select the routing destination and the caller topic].

Regarding **claim 5**, Carpenter discloses an automated call routing system, further comprising a benefit matrix as input to the maximum benefit router, the benefit matrix having at least one routing destination and at least one caller topic (column 4, lines 54-59) [The term-document matrix has a caller topic and a routing destination].

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Regarding **claim 6**, Carpenter discloses an automated call routing system, wherein the topic identifier generates a topic likelihood vector that is input to the maximum benefit router (column 8, lines 31-34) [The term extractor generates a vector query].

Regarding **claim 7**, Carpenter discloses an automated call routing system, wherein entries in the benefit matrix define the benefit in seconds of agent time saved by routing the call to a first destination based upon a first caller topic (column 2, lines 56-65) [The routine benefit the agent time by routing the caller to the right banking department].

Regarding **claim 8**, Carpenter discloses an automated call routing system, wherein the maximum benefit router routes the telephone call to a first call center based upon optimized response quality (column 10, lines 8-16).

Regarding **claim 11**, Carpenter discloses an automated call routing system, wherein the speech recognizer is a spoken language-understanding device (column 4, lines 11-25).

Regarding **claim 14**, Carpenter discloses an automated call routing system (102 on FIG. 2) that routes a telephone call (column 2, lines 56-65) by responding to a routing objective (100 on FIG. 1) of a calling party (110 on FIG. 1), comprising:

a recognizer (204 on FIG. 2) that determines at least one phrase made by the calling party (column 3, lines 42-47) and outputs a second phrase (column 3, lines 47-63) [The voice recognition generates the text for the router].

a topic identifier (402 on FIG. 4) that receives the second phrase (text, column 7, line 49) and converts the second phrase to at least one of a word stem (column 8, lines 18-20) [The root of the term is the word stem] and a word class (column 8, lines 10-13) [The eligible words are a word class in the term list] and generates a topic output (column 7, lines 47-67) [The term extractor extract relevant terms to form a query to match the caller's response]; and

a maximum benefit router (412 on FIG. 4) that receives the topic output [The pseudo-document vector 407] and determines where to route the call in order to optimize at least one predetermined parameter [Routing destinations: New Accounts Department, Checking Department and Loan Department] (column 8, lines 31-67) [The router determines the predetermined parameter according to the pseudo-document vector received where to route the call].

Regarding **claim 15**, Carpenter discloses an automated call routing system, wherein the call can be one of a telephone call (column 3, lines 42-63).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Carpenter in view of Chen (US 6,349,307).

Regarding **claim 9**, Carpenter as applied to **claim 1** above differs from **claim 9** in that it fails to disclose using Bayesian decision theory.

However, Chen teaches an automated call routing system, wherein the maximum benefit router optimizes at least one predetermined parameter using Bayesian decision theory and determining minimum overall risk (column 5, lines 36-51).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to use Bayesian decision theory of Chen in the invention of Carpenter.

The modification of the invention will offer the capability of routing the call such as the routing will be more efficient.

Regarding **claim 10**, Carpenter discloses an automated call routing system, wherein the minimum overall risk is the maximum benefit (column 2, lines 56-65).

5. **Claims 12 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Carpenter in view of Cohen (US 6,295,533).

Regarding **claim 12**, Carpenter as applied to **claim 1** above differs from **claim 12** in that it fails to disclose a stemming algorithm.

However, Cohen teaches an automated call routing system, the topic identifier further comprising a stemming algorithm (column 15, lines 38-49).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to use a stemming algorithm of Cohen in the invention of Carpenter.

The modification of the invention will offer the capability of routing the call such as the routing will be more efficient.

Regarding **claim 13**, Carpenter and Cohen as applied to **claim 12** above differ from **claim 13** in that it fails to disclose a Porter stemming algorithm.

However, Cohen teaches an automated call routing system of claim 12, wherein the stemming algorithm is Porter Stemming (column 15, lines 38-49).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to use a Porter stemming algorithm of Cohen in the invention of Carpenter.

The modification of the invention will offer the capability of routing the call such as the routing will be more efficient.

6. **Claims 16-18 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Carpenter in view of Mijares, Jr. et al. (US 6,330,311).

Regarding **claim 16**, Carpenter discloses a method for automatic call routing including disambiguating routing decisions (column 1, lines 7-9), (which reads on claimed "a method for automatically routing a telephone call"), comprising the steps of:

receiving a telephone call (column 3, line 42) from a caller (column 3, lines 42-45);

determining phrases (column 4, line 16 "car loan") from speech utterances (column 4, line 9 "caller utterances") by a caller (column 4, lines 6-16) [The morphological processor extracts the root form of each word of the document];

inputting the determined phrases to a speech recognizer device (204 on FIG. 2 and column 3, lines 45-51) [The voice recognition unit received the voice responses from the caller];

converting the recognized determined phrases into at least one of word stems (column 8, lines 18-20) [The root of the term is the word stem] and word classes (column 8, lines 10-13) [The eligible words are a word class in the term list];

performing keyword look up on the one of word stems and word classes (column 4, lines 6-10) [The root forms of each word are filtered through two lists and the word class will determine the routing destination];

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generating a feature vector (column 5, line 5) that contains the number of times the at least one word stems and word classes were found in the determined phrase (column 5, lines 4-26) [The vector range will determine the counts of terms used];

performing analysis on the feature vector (column 5, lines 27-38) [The vector is read by the scores destination in order to perform the matching route];

outputting a posterior possibilities vector (column 5, lines 39-63) [The scoring processor outputting the vector for possible weighting of each term];

inputting the posterior possibilities vector (column 7, lines 27-31) and determining a predetermined destination (column 7, lines 32-35) [The routing value will determine a particular destination]; and

outputting a sorted vector of destinations (column 7, line 57) and topic scores (column 7, lines 47-59) [The term extractor receives text generated by the automated voice recognition system and the terms are organized to form a query using information contained in the scoring matrix].

Carpenter fails to disclose determining the expected benefit of routing the call.

However, Mijares, teaches the expected benefit (column 5, line 28 "low cost call") of routing the call (column 5, lines 24-54) [Based upon the destination a programmable unit locates the least expensive low cost call carrier].

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to use determining the expected benefit of routing the call of Mijares in the invention of Carpenter.

The modification of the invention will offer the capability of determining the expected benefit of routing the call such as the caller would received the bills from the low cost call carriers.

Regarding **claim 17**, Carpenter discloses the analysis is performed on the feature vector using one of a multinomial model, a generalized linear model and a support vector machine (column 5, lines 39-63).

Regarding **claim 18**, Carpenter discloses the posterior possibilities vector is a vector of scores for topics, each score representing confidence that the determined phrase is related to a predetermined topic and vector size is the number of topics (column 5, lines 39-63).

Regarding **claim 20**, Carpenter discloses determining whether to route the call to a top-ranking destination or to reject the utterance if the topic score and/or benefit falls below a predetermined threshold (column 5, lines 39-63).

Response to Arguments

7. Applicant's arguments filed on 10/15/2002 have been fully considered but they are not persuasive.

The applicant's argument on page 7, second paragraph recites that Carpenter fails to disclose a maximum benefit router and does not determine where to route a call based on maximum benefit parameter.

The examiner disagrees with the statement that Carpenter fails to disclose a router because Carpenter discloses that the call is routed when there is a one to one correlation between the query-document score and a destination (column 8, lines 59-67); therefore Carpenter must have a router.

The applicant fails to recite on **claims 1 and 14** that the call is routed based on maximum benefit.

Note, the claim 1 only recites "a maximum benefit router" without further recite that "the call is routed based on maximum benefit". Since the Carpenter's router is selected for providing the best routing path to the call, therefore Carpenter's router is the maximum benefit router to provide the best call path to the call.

Therefore **claims 1-8, 11 and 14-15** stand rejected over Carpenter.

8. Applicant's arguments with respect to **claims 16-20** have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gerald Gauthier whose telephone number is (703) 305-0981. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (703) 305-4895. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.


g.g.
December 11, 2002

FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

